WHAT IS CLAIMED IS:

1. An aqueous acrylic emulsion polymer comprising, as copolymerized units, 70 to 99.5% by weight, based on dry polymer weight, monoethylenically unsaturated nonionic (meth)acrylic monomer and from 0.3 to 10% by weight, based on dry polymer weight, monoethylenically unsaturated acid monomer, wherein at least 40% by weight, based on dry polymer weight, of said emulsion polymer is formed by redox polymerization in the presence of 0.001 to 0.05 moles chain transfer agent per kg dry polymer weight.

2. The acrylic emulsion polymer of claim 1 wherein said redox polymerization is effected in the presence of 0.0025 to 0.025 moles chain transfer agent per kg dry polymer weight.

3. The acrylic emulsion polymer of claim 1 wherein said redox polymerization is effected at a pH of 4 to 8.

4. An aqueous coating composition comprising an aqueous acrylic emulsion polymer, said polymer comprising, as copolymerized units, 70 to 99.5% by weight, based on dry polymer weight, monoethylenically unsaturated nonionic (meth)acrylic monomer and from 0.3 to 10% by weight, based on dry polymer weight, monoethylenically unsaturated acid monomer, wherein at least 40% by weight, based on dry polymer weight, of said emulsion polymer is formed by redox polymerization in the presence of 0.001 to 0.05 moles chain transfer agent per kg dry polymer weight.

5. The aqueous coating composition of claim 3 wherein said redox polymerization is effected in the presence of 0.0025 to 0.025 moles chain transfer agent per kg dry polymer weight.

6. The aqueous coating composition of claim 3 having a PVC of 15 to 38 and having VOC less than 5% by weight based on the total weight of the coating composition.

7. The aqueous coating composition of claim 3 having a PVC greater than 38 and having VOC less than 3% by weight based on the total weight of the coating composition.

8. The aqueous coating composition of claim 4 having a PVC of 15 to 85 and having VOC less than 1.7% by weight based on the total weight of the coating composition.

9. A method for improving the scrub resistance of a dry coating comprising:

a) forming an aqueous coating composition comprising an aqueous acrylic emulsion polymer, said polymer comprising, as copolymerized units, 70 to 99.5% by weight, based on dry polymer weight, monoethylenically unsaturated nonionic (meth)acrylic monomer and from 0.3 to 10% by weight, based on dry polymer weight, monoethylenically unsaturated acid monomer, wherein at least 40% by weight, based on dry polymer weight, of said emulsion polymer is formed by redox polymerization in the presence of 0.001 to 0.05 moles chain transfer agent per kg dry polymer weight;

b) applying said coating composition to a substrate; and

c) drying, or allowing to dry, said applied coating composition.

10. The method of claim 9 wherein said redox polymerization is effected in the presence of 0.0025 to 0.025 moles chain transfer agent per kg dry polymer weight.

11. A method for improving the adhesion of a dry coating comprising:

a) forming an aqueous coating composition comprising an aqueous acrylic emulsion polymer, said polymer comprising, as copolymerized units, 70 to 99.5% by weight, based on dry polymer weight, monoethylenically unsaturated nonionic (meth)acrylic monomer, 0.1 to 12.5% by weight, based on dry polymer weight, aldehyde reactive group-containing monomer, and from 0.3 to 10% by weight, based on dry polymer weight, monoethylenically unsaturated acid monomer, wherein at least 40% by weight, based on dry polymer weight, of said emulsion polymer is formed by redox polymerization in the presence of 0.001 to 0.05 moles chain transfer agent per kg dry polymer weight;

b) applying said coating composition to a substrate; and

c) drying, or allowing to dry, said applied coating composition.

12. A method for improving the adhesion of a dry coating to an alkyd substrate comprising

a) forming an aqueous coating composition comprising

(1) a first aqueous emulsion polymer comprising 0-2%, by weight based on the total weight of said first polymer, ethylenically unsaturated aldehyde reactive group-containing monomer, said first polymer having a glass transition temperature from -60 °C to 80 °C and a particle diameter of 200 to 1000 nanometers, prepared in the presence of 0.001-6%, by weight based on the dry weight of said first emulsion polymer, of a colloidal stabilizer selected from the group consisting of hydroxyethyl cellulose, N-vinyl pyrrolidone, polyvinyl alcohol, partially acetylated polyvinyl alcohol, carboxymethyl cellulose, gum arabic, and mixtures thereof, and (2) a second aqueous emulsion polymer, said second polymer having a glass transition temperature (Tg) from -60 °C to 80 °C and a particle diameter of 30 to 200 nanometers, formed by the free radical polymerization of at least one ethylenically unsaturated nonionic acrylic monomer, 0.1-12.5%, by weight based on the total weight of said second polymer, ethylenically unsaturated aldehyde reactive group-containing monomer, and 0-7.5%, by weight based on the total weight of said second polymer, ethylenically unsaturated acid monomer , wherein at least 40% by weight, based on dry polymer weight, of said second emulsion polymer is formed by redox polymerization in the presence of 0.001 to 0.05 moles chain transfer agent per kg dry polymer weight;

wherein the dry weight ratio of said second polymer to said first polymer is from 1:99 to 1:1;

b)applying said aqueous coating composition to said alkyd substrate; and

c)drying, or allowing to dry, said aqueous composition.